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Resistance Heterogeneity and Small Airway Asthma Phenotype

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Resistance heterogeneity and small airways asthma phenotype

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To the editor,

We read with interest the elegant modelling data of Foy et al (1) who reported a 40% narrowing of small airways was associated with clinically relevant alterations in asthma control and quality of life. Such effects were commensurate with observed responses to biologics on the frequency dependent heterogeneity of the resistance component of respiratory impedance measured by impulse oscillometry (IOS), where the mean (95% CI) pooled effect on R5-R20 was -0.04 (-0.03,-0.05) kPa/l.s.

To further put these changes into clinical context, we previously measured IOS in response to propranolol induced bronchoconstriction in asthma patients where there was a 0.05 kPa/l.s increase in R5-R20 corresponding to a 104.1% (22.6, 185.6) change, along with a subsequent bronchodilator response to salbutamol of -0.17 kPa/l.s and -115.6% (-55.6,-175.7) respectively (2). Moreover in a health informatics evaluation of 302 asthma patients there was a 45% increased risk of worse control in relation to oral corticosteroid use and 47% in relation to inhaled salbutamol use measured over a two year period when comparing cohorts of asthma patients using a cut off value for R5-R20 of less than or greater than 0.07 kPa/l.s (3).

Hence the small airways asthma phenotype reflected by abnormal R5-R20 is associated with poorer control. We believe the findings of Foy et al (1) are important in further validating the use of IOS in determining effects of treatments on small airways of patients with asthma.

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